



AFRL helps cadets with engineering course

by Erin Caylor, AFRL Public Affairs

WRIGHT-PATTERSON AIR FORCE BASE, Ohio — With funding from the Air Force Research Laboratory, the Astronautical Engineering Department at the U.S. Air Force Academy, Colorado Springs, Colo., soared into the third year of its hands-on space systems development program called FalconLAUNCH. FalconLAUNCH-3 took flight April 30, 2005.

FalconLAUNCH is a two-semester capstone course for cadets majoring in astronautical engineering, allowing cadets to “learn space by doing space,” as they are given the opportunity to design, test and launch an actual single-stage rocket.

AFRL has been an active part in the success of this program, contributing over \$150,000 each year. With this money, AFRL has provided cadets with engineering drafting and machining support, along with rocket propellant, test equipment, operating costs and raw materials for the construction of the rocket.

In addition to funding, AFRL provides technical expertise and expert review of the program. Once the design is made, AFRL engineers and other experts extensively review it during the critical design review phase before the test program begins. Their knowledge is also used to help solve program issues.

Last year’s FalconLAUNCH-2 was not successful in flight. AFRL helped to identify fin flutter as the probable failure mode and provided suggestions for improvement. They applied the lessons learned into this year’s fin design which resulted in a successful launch.

Two visits with aerospace industries have also been made possible because of AFRL. This year, the cadets visited ATK, an advanced weapon and space systems company in Brigham City, Utah. During this trip, cadets learned first-hand about solid rocket motor manufacturing. The second visit was to AFRL’s Propulsion Directorate, Edwards Air Force Base, Calif.

With continued success and progression of the FalconLAUNCH program, the eventual goal is to create a rocket that will deliver a 5-pound scientific or experimental payload to an altitude of over 60 miles. Another goal is to establish a basic capability to fly small Air Force and DoD scientific and engineering payloads on a yearly basis.

“Without AFRL, we couldn’t come close to providing the same extensive, rich, capstone design experience we do now for these future Air Force leaders,” said Maj. Ralph Sandfry, the FalconLAUNCH program manager at the Air Force Academy.

Two other capstone classes offered to cadets majoring in astronautical engineering are FalconSAT and FalconOPS. FalconSAT is a small satellite program and was the pilot program of the three. FalconSAT-2 is scheduled to launch later this year and FalconSAT-3 is currently being designed by this year’s class and scheduled to launch in 2006. AFRL’s Space Vehicles Directorate is currently a supporter of this program and may be interested in FalconLAUNCH when it reaches an altitude of 100 km.

After seeing the success of FalconSAT, FalconLAUNCH was created in 2001 and FalconOPS followed shortly after in 2004. These programs are only three of the 300 undergraduate research programs offered at the academy. @